What is claimed is:

1. Device for determining a state of ageing of an exhaust-gas catalytic converter arranged in an exhaust pipe of an internal combustion engine, having an oxygen sensor which is arranged in the exhaust pipe and is assigned to the exhaust-gas catalytic converter, the oxygen sensor having an oxygen-sensitive region for measuring an oxygen partial pressure in the exhaust gas and being connected to an electronic control unit, wherein the oxygen sensor has a temperature-sensitive region and can be actuated by the control unit in such a manner that at least one of a temperature measurement and an oxygen partial pressure measurement can be carried out.

2. Device according to Claim 1, wherein the temperature-sensitive region of the oxygen sensor is formed by the oxygen-sensitive region and is a solid electrolyte.

3. Device according to Claim 1, wherein the temperature-sensitive region of the oxygen sensor is a heating conductor structure.

4. Device according to Claim 1, wherein a temperature probe is provided in the exhaust pipe, and the temperature probe and the oxygen sensor are arranged in such a manner in the exhaust pipe that at least a partial region of the exhaust-gas catalytic converter is located between the oxygen sensor and the temperature probe.

5. Device according to Claim 2, wherein a temperature probe is provided in the exhaust pipe, and the temperature probe and the oxygen sensor are arranged in such a manner in the exhaust pipe that at least a partial region of the exhaust-gas catalytic converter is located between the oxygen sensor and the temperature probe.

6. Device according to Claim 3, wherein a temperature probe is provided in the exhaust pipe, and the temperature probe and the oxygen sensor are arranged in such a manner in the exhaust pipe that at least a partial region of the exhaust-gas catalytic converter is located between the oxygen sensor and the temperature probe.

7. Device according to Claim 1, wherein the oxygen sensor is arranged in one of the exhaust-gas catalytic converter and the exhaust pipe downstream of the exhaust-gas catalytic converter, and a second oxygen sensor is arranged in the exhaust pipe upstream of the exhaust-gas catalytic converter.

8. Device according to Claim 2, wherein the oxygen sensor is arranged in one of the exhaust-gas catalytic converter and the exhaust pipe downstream of the exhaust-gas catalytic converter, and a second oxygen sensor is arranged in the exhaust pipe upstream of the exhaust-gas catalytic converter.

9. Device according to Claim 3, wherein the oxygen sensor is arranged

in one of the exhaust-gas catalytic converter and the exhaust pipe downstream of the exhaust-gas catalytic converter, and a second oxygen sensor is arranged in the exhaust pipe upstream of the exhaust-gas catalytic converter.

10. Device according to Claim 4, wherein the oxygen sensor is arranged in one of the exhaust-gas catalytic converter and the exhaust pipe downstream of the exhaust-gas catalytic converter, and a second oxygen sensor is arranged in the exhaust pipe upstream of the exhaust-gas catalytic converter.

11. Method for determining a state of ageing of an exhaust-gas catalytic converter arranged in an exhaust pipe of an internal combustion engine, in which an oxygen partial pressure of the exhaust gas is determined using an oxygen sensor assigned to the exhaust-gas catalytic converter, wherein, as the internal combustion engine is warming up, an electrical conductivity of a conductor structure of the oxygen sensor is measured, a first exhaust-gas temperature is determined from this measurement, and the first exhaust-gas temperature is compared with a second exhaust-gas temperature.

12. Method according to Claim 11, wherein, to determine the first exhaust-gas temperature, the electrical conductivity of a solid electrolyte, which is used to determine the oxygen partial pressure, of the oxygen sensor is measured.

13. Method according to Claim 11, wherein, to determine the first

exhaust-gas temperature, the electrical conductivity of a heating conductor structure of the oxygen sensor is measured.

14. Method according to Claim 11, wherein the second exhaust-gas temperature is measured using a temperature probe arranged in the exhaust pipe.

15. Method according to Claim 12, wherein the second exhaust-gas temperature is measured using a temperature probe arranged in the exhaust pipe.

16. Method according to Claim 13, wherein the second exhaust-gas temperature is measured using a temperature probe arranged in the exhaust pipe.

17. Method according to Claim 11, wherein the second exhaust-gas temperature is measured using a second oxygen sensor.

18. Method according to Claim 12, wherein the second exhaust-gas temperature is measured using a second oxygen sensor.

19. Method according to Claim 13, wherein the second exhaust-gas temperature is measured using a second oxygen sensor.

20. Method according to Claim 11, wherein the second exhaust-gas temperature is determined by modelling.

21. Method according to Claim 12, wherein the second exhaust-gas temperature is determined by modelling.

22. Method according to Claim 13, wherein the second exhaust-gas temperature is determined by modelling.

23. Method according to Claim 11, wherein a light-off temperature of the catalytic converter is determined from the comparison of the first exhaust-gas temperature and the second exhaust-gas temperature, and an oxygen storage capacity of the catalytic converter is determined from the measurement of the oxygen partial pressure, and the state of ageing of the catalytic converter is determined from the light-off temperature and the oxygen storage capacity.

24. Method according to Claim 12, wherein a light-off temperature of the catalytic converter is determined from the comparison of the first exhaust-gas temperature and the second exhaust-gas temperature, and an oxygen storage capacity of the catalytic converter is determined from the measurement of the oxygen partial pressure, and the state of ageing of the catalytic converter is determined from the light-off temperature and the oxygen storage capacity.

25. Method according to Claim 13, wherein a light-off temperature of the catalytic converter is determined from the comparison of the first exhaust-gas temperature and the second exhaust-gas temperature, and an oxygen storage capacity of the catalytic converter is determined from the measurement of the oxygen partial pressure, and the state of ageing of the catalytic converter is determined from the light-off temperature and the oxygen storage capacity.

26. Method according to Claim 14, wherein a light-off temperature of the catalytic converter is determined from the comparison of the first exhaust-gas temperature and the second exhaust-gas temperature, and an oxygen storage capacity of the catalytic converter is determined from the measurement of the oxygen partial pressure, and the state of ageing of the catalytic converter is determined from the light-off temperature and the oxygen storage capacity.

27. Method according to Claim 15, wherein a light-off temperature of the catalytic converter is determined from the comparison of the first exhaust-gas temperature and the second exhaust-gas temperature, and an oxygen storage capacity of the catalytic converter is determined from the measurement of the oxygen partial pressure, and the state of ageing of the catalytic converter is determined from the light-off temperature and the oxygen storage capacity.

28. Method according to Claim 16, wherein a light-off temperature of the catalytic converter is determined from the comparison of the first exhaust-gas temperature and the second exhaust-gas temperature, and an oxygen storage

capacity of the catalytic converter is determined from the measurement of the oxygen partial pressure, and the state of ageing of the catalytic converter is determined from the light-off temperature and the oxygen storage capacity.

29. An apparatus for determining a state of ageing of an exhaust-gas catalytic converter arranged in an exhaust pipe of an internal combustion engine, comprising:

an oxygen sensor disposed in the exhaust pipe, the oxygen sensor having an oxygen-sensitive region for detecting an oxygen partial pressure in the exhaust gas and a temperature-sensitive region for detecting a temperature of the exhaust gas; and

a control unit adapted to receive signals from the oxygen sensor corresponding to a detected oxygen partial pressure and a detected exhaust gas temperature,

wherein the control unit determines at least one of the exhaust gas temperature and the oxygen partial pressure from at least one of the oxygen sensor signals.

30. The apparatus of claim 29, wherein the temperature-sensitive region and the oxygen-sensitive region are formed from a single region of a solid electrolyte.

31. The apparatus of claim 29, wherein the temperature-sensitive region is a heating conductor structure.

32. The apparatus of claim 29, further comprising:

a temperature probe provided in the exhaust pipe,

wherein at least a partial region of the catalytic converter is located between the oxygen sensor and the temperature probe.

33. The apparatus of claim 30, further comprising:

a temperature probe provided in the exhaust pipe,

wherein at least a partial region of the catalytic converter is located between the oxygen sensor and the temperature probe.

34. The apparatus of claim 31, further comprising:

a temperature probe provided in the exhaust pipe,

wherein at least a partial region of the catalytic converter is located between the oxygen sensor and the temperature probe.

35. The apparatus of claim 29, further comprising:

a second oxygen sensor disposed in the exhaust pipe upstream of the catalytic converter,

wherein the first oxygen sensor is disposed in one of the catalytic converter and the exhaust pipe downstream of the catalytic converter.

36. The apparatus of claim 30, further comprising:

a second oxygen sensor disposed in the exhaust pipe upstream of the

catalytic converter,

wherein the first oxygen sensor is disposed in one of the catalytic converter and the exhaust pipe downstream of the catalytic converter.

37. The apparatus of claim 31, further comprising:

a second oxygen sensor disposed in the exhaust pipe upstream of the catalytic converter,

wherein the first oxygen sensor is disposed in one of the catalytic converter and the exhaust pipe downstream of the catalytic converter.

38. The apparatus of claim 32, further comprising:

a second oxygen sensor disposed in the exhaust pipe upstream of the catalytic converter,

wherein the first oxygen sensor is disposed in one of the catalytic converter and the exhaust pipe downstream of the catalytic converter.

39. A method for determining a state of ageing of an exhaust-gas catalytic converter arranged in an exhaust pipe of an internal combustion engine, comprising the steps of:

providing oxygen sensor disposed in the exhaust pipe, the oxygen sensor having an oxygen-sensitive region for detecting an oxygen partial pressure in the exhaust gas and a temperature-sensitive region for detecting a temperature of the exhaust gas;

detecting an oxygen partial pressure of the exhaust gas;

detecting a first exhaust-gas temperature by determining an electrical conductivity of a conductor structure of the oxygen sensor as the internal combustion engine is warming up; and

comparing the first exhaust-gas temperature with a second exhaust-gas temperature.

40. The method of Claim 39, wherein the step of detecting the first exhaust-gas temperature comprises determining the electrical conductivity of a solid electrolyte used to determine the oxygen partial pressure.

41. The method of Claim 39, wherein, the step of detecting the first exhaust-gas temperature comprises determining the electrical conductivity of a heating conductor structure of the oxygen sensor.

42. The method of Claim 39, wherein the second exhaust-gas temperature is detected using a temperature probe arranged in the exhaust pipe.

43. The method of Claim 40, wherein the second exhaust-gas temperature is detected using a temperature probe arranged in the exhaust pipe.

44. The method of Claim 41, wherein the second exhaust-gas temperature is detected using a temperature probe arranged in the exhaust pipe.

45. The method of Claim 39, wherein the second exhaust-gas

temperature is detected using a second oxygen sensor.

46. The method of Claim 40, wherein the second exhaust-gas temperature is detected using a second oxygen sensor.

47. The method of Claim 41, wherein the second exhaust-gas temperature is detected using a second oxygen sensor.

48. The method of Claim 39, wherein the second exhaust-gas temperature is determined by modelling.

49. The method of Claim 40, wherein the second exhaust-gas temperature is determined by modelling.

50. The method of Claim 41, wherein the second exhaust-gas temperature is determined by modelling.

51. The method of Claim 39, further comprising the steps of:

determining a light-off temperature of the catalytic converter by comparing the first exhaust-gas temperature and the second exhaust-gas temperature;

determining an oxygen storage capacity of the catalytic converter from the measurement of the oxygen partial pressure; and

determining the state of ageing of the catalytic converter from the light-off

temperature and the oxygen storage capacity.

52. The method of Claim 40, further comprising the steps of:

determining a light-off temperature of the catalytic converter by comparing the first exhaust-gas temperature and the second exhaust-gas temperature;

determining an oxygen storage capacity of the catalytic converter from the measurement of the oxygen partial pressure; and

determining the state of ageing of the catalytic converter from the light-off temperature and the oxygen storage capacity.

53. The method of Claim 41, further comprising the steps of:

determining a light-off temperature of the catalytic converter by comparing the first exhaust-gas temperature and the second exhaust-gas temperature;

determining an oxygen storage capacity of the catalytic converter from the measurement of the oxygen partial pressure; and

determining the state of ageing of the catalytic converter from the light-off temperature and the oxygen storage capacity.

54. The method of Claim 42, further comprising the steps of:

determining a light-off temperature of the catalytic converter by comparing the first exhaust-gas temperature and the second exhaust-gas temperature;

determining an oxygen storage capacity of the catalytic converter from the measurement of the oxygen partial pressure; and

determining the state of ageing of the catalytic converter from the light-off temperature and the oxygen storage capacity.

55. The method of Claim 43, further comprising the steps of:

determining a light-off temperature of the catalytic converter by comparing the first exhaust-gas temperature and the second exhaust-gas temperature;

determining an oxygen storage capacity of the catalytic converter from the measurement of the oxygen partial pressure; and

determining the state of ageing of the catalytic converter from the light-off temperature and the oxygen storage capacity.

56. The method of Claim 44, further comprising the steps of:

determining a light-off temperature of the catalytic converter by comparing the first exhaust-gas temperature and the second exhaust-gas temperature;

determining an oxygen storage capacity of the catalytic converter from the measurement of the oxygen partial pressure; and

determining the state of ageing of the catalytic converter from the light-off temperature and the oxygen storage capacity.